use of "Disconanthe" and "Siphonanthe," in place of "Disconanthæ" and "Siphonanthæ," are astonishing, when we note that the translator is M.A. of the University which refuses to inquire whether "compulsory Greek" is useful or not.

A very different work from Prof. Lang's is the treatise on the embryology of the Invertebrata by Drs. Korschelt and Heider, of the University of Berlin, of which an English translation is in preparation. Two parts of this admirable book have appeared, containing 900 pages and more than 500 woodcuts, dealing with the embryology of the Porifera, Cnidaria, Ctenophora, Platyhelmia, Orthonectidæ, Dicyemidæ, Nemertina, Nemathelminthes, Acanthocephali, Rotatoria, Annelida (including Echiurids and Leeches herein), Sipunculidæ, Chætognatha, Enteropneusta, Echinoderma, and the Arthropoda. The various classes of the last-named phylum occupy two-thirds of the work at present issued. There remain still to be dealt with the Mollusca, the Bryozoa, and the Tunicata.

The best idea which can be given of the scope and value of this work is obtained when we compare it with Frank Balfour's treatise on comparative embryology. It is not too much to say that it is the most valuable text-book for the zoological student which has appeared since Balfour's book, and is a worthy successor to it. The mass of literature, vast as it was ten years ago, has increased enormously in the interval. Drs. Korschelt and Heider have carefully gone over it all; and not only that, but they accurately and clearly give each author's contribution to the subject in hand, citing authority for every statement made, so that the student can go to the original treatises for fuller detail. I do not know of any scientific treatise which shows so clearly the authors' desire to do justice to every fellow-worker of whatever nationality, and to produce a work which shall be a complete and trustworthy guide to the recent literature of a prodigiously prolific subject. Very often the authors abstain from offering a decided opinion upon a matter where the observations made have led previous writers to diverse conclusions: such cases are those in which the facts are incompletely observed and obviously require renewed investigation. But where the observed facts on one side or the other are of a decisive character, the authors, after giving both sides in detail, exercise a judicial function.

The book deals not only with the earlier but also with the later stages of development, and not merely with the facts of embryology, but with the conclusions as to the affinities of groups, which are so severely tested by the progress of embryological inquiry.

It is not possible to particularize in regard to such a work as this, but I have been struck by the very full way in which the morphology of the Crustacea, and each succeeding class of Arthropods, has been dealt with in every respect in which embryology throws light upon it. A very fully illustrated chapter gives a complete and impartial account of the researches of Sedgwick, Sheldon, and Kennell on the development of different species of Peripatus. The question as to the relationship of the Arachnida to Limulus and the Eurypterines, alluded to above, is fully treated by Drs. Korschelt and Heider. They summarize the arguments with clearness, and state and weigh fairly nearly every fact which has been adduced in favour of the association of Limulus and the Eurypterines with the Arachnida. Their conclusion is as widely different from Lang's as is their method of discussion.

There can be no doubt that we have in this new treatise on comparative embryology one of those invaluable, indispensable works for the production of which authors receive the gratitude and esteem of their fellow-workers in all lands. It is a truly first-rate book.

E. RAY LANKESTER.

MODERN ARTILLERY.

The Artillery of the Future and the New Powders. By James Atkinson Longridge, M.I.C.E. (London: E. and F. N. Spon, 1891.)

MR. LONGRIDGE keeps pegging away at his favourite subject, which he originally brought forward, now more than thirty years ago, in the Proceedings of the Institution of Civil Engineers.

His valuable ideas are at length receiving recognition, and his principle of strengthening guns, by layers of wire wound with appropriate initial tension, is now largely employed in the construction of modern ordnance.

The chief object of the present book is to point out that the fullest application of his principle of wire strengthening permits of the use of much higher powder pressures than are considered admissible in Government circles; and that thereby guns may be much shortened and reduced in weight, while at the same time the full power of the most modern high explosives can be utilized.

This is to a great extent a return on the steps which have guided our gun designers in recent years; their chief object being, to reduce initial pressure as much as possible, say down to 17 tons per square inch, and to get the full power out of the powder by a great increase in the length of bore, up to 40 and even 50 calibres in length in guns of large size.

Mr. Longridge is fully acquainted with all the valuable and original work in gunnery science which has been developed of late years in France by Sarrau, Veille, and Sebert; and analyzes carefully in chapters ii. and iii. the various experimental methods and empirical formulas in use for the measurement of powder pressure in the bore of a gun.

In chapter iii. he attempts a theoretical explanation and formula for maximum pressure and total energy, but his investigation rests upon an assumption of the *adiabatic law;* and the mathematical treatment is not presented in an inviting or elegant form. Considering the unexplained chemical combinations which affect the rate of combustion of the modern smokeless powders, this mathematical assumption can only roughly account for an average performance, and leaves unexplained the violent abnormal effects sometimes experienced and shown in General Wardell's curves, to guard against which the gunmaker has to exercise a vigilant caution.

General Brackenbury is quoted as calling gunpowder the Spirit of Artillery, and in his official capacity, Superintendent of the Royal Gunpowder Factory, as a maker of gunpowder, saying metaphorically, "How sad the body is so weak" in preference to "What a pity the spirit is so strong."

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But so long as steel is the strongest material of which the body—the gun—can be constructed, makers of powder and explosives, new and old, must be content to moderate and regulate the strength of their compounds. Much was expected of gun-cotton in its early days as a propulsive agent, but these hopes were falsified by the uncertainty of its action.

Again, with the vast extent of our Empire, climatic conditions have to be considered in their bearing on the action and preservation of explosives, conditions which do not affect French or German artillerists, who know the exact limits over which their warlike operations must take place. A. G. G.

GIANTS AND ACROMEGALY.

The Skeleton of the Irish Giant, Cornelius Magrath. By Dr. D. J. Cunningham, F.R.S. (Dublin: Published by the Royal Irish Academy, 1891).

NOTWITHSTANDING the close attention which has been applied to the clinical aspects of disease during so many centuries, every now and then some observer, more acute than his brethren, recognizes a morbid condition which had not previously been satisfactorily discriminated, and gives to it a name. Although in some cases the form of disease is thought to be new, and is described as such, it is generally found, when the records of medicine are examined, that corresponding cases and symptoms had been noticed previously, although their import had not been properly understood, and they had not been distinguished by a special name.

Amongst the latest contributions in this direction is a memoir published in 1886 by M. Pierre Marie, in which he described a morbid condition where the hands and feet were enlarged out of proportion to the rest of the body, chiefly due to a hypertrophy of the soft parts; and where the face had become remarkably elongated and deformed, partly from hypertrophy of the soft parts, but more especially from an increase in magnitude of the bones of the face, of the glabella and supraciliary ridges of the frontal bone, and of the pituitary fossa. To this condition M. Marie gave the name of Acromegaly. The attention of physicians and pathologists having thus been directed to the subject, several similar cases were described in the course of the next three or four years; and a few other cases and specimens previously recorded in medical literature were recognized as having been similarly affected. One of the most important of these was a skeleton in the Anatomical Museum of the University of Edinburgh, which was determined by Dr. H. Alexis Thomson to be a case of acromegaly, and the giant characters of the skeleton were associated with the peculiarly hypertrophied condition of the soft parts above referred to.

It was the perusal of Dr. Thomson's account of the Edinburgh skeleton which led Prof. Cunningham to pay especial attention to the characters displayed by the skeleton of the Irish giant Cornelius Magrath, which has been in the museum of Trinity College, Dublin, for 131 years, and to conclude that it also was an example of acromegaly. Dr. Cunningham's memoir, in addition to the anatomical description of the skeleton, contains much interesting information relative to Magrath himself, which he has collected from various quarters. Magrath was born in Tipperary in 1736, and died in Dublin in 1760, at the age of 23. He seems to have attained a height of 6 feet 8¾ inches when he was only sixteen years old; and for several years he travelled about as a show, and visited many of the great cities of Europe. The accounts which were given of his height in the periodical literature of the day, after he had reached his full dimensions, varied considerably; and a most exaggerated statement, that he was 8 feet 4 inches, made apparently with the view of out-rivalling the altitude of the skeleton of another Irish giant, Charles Byrne, in the Hunterian Museum, London, has found its way into anatomical literature. Dr. Cunningham has subjected all these statements to a careful analysis, and has studied and examined the skeleton itself, from which he concludes that the articulated skeleton is only 7 feet 2¼ inches high, and that this in all probability expresses the maximum height during life. Magrath is thus by no means the tallest giant whose height has been put on record. Charles Byrne was three or four inches taller; and Topinard, Ranke and Virchow have recorded examples of persons who ranged in height from 7 feet 3⅜ inches to 8 feet 4¼ inches. From an examination which Prof. Cunningham has made of the skeleton of Byrne in the Hunterian Museum, he has come to the conclusion that in certain particulars, *e.g.* the magnitude of the lower jaw, the dilated pituitary fossa, and the great size of the feet, it presents some of the characters of acromegaly. It must not, however, be supposed that giant growth is necessarily associated with the condition of acromegaly; for although it is not unusual to find the lower jaw disproportionately large in giants, yet it by no means follows that the other signs of acromegaly should be present.

Dr. Cunningham suggests that the morbid condition which M. Marie christened acromegaly should be known by the more etymologically correct term of "megalacria."

PEAKS AND PASSES IN NEW ZEALAND.

With Axe and Rope in the New Zealand Alps. By George Edward Mannering. With Illustrations. (London: Longmans, Green, and Co., 1891.)

TEN years ago the ice scenery of the New Zealand Alps was almost unknown even to the colonists. But in 1882 the Rev. W. S. Green, with two first-class Swiss guides, explored the glacier region beneath the highest peak —Aorangi, or Mount Cook—and arrived, after a long, difficult, and dangerous climb, on the summit of that mountain. His delightful volume "The High Alps of New Zealand," and the laborious explorations of Dr. von Lendenfeld in the following year, indicated that a region, certainly not inferior in grandeur and beauty to the Alps of Europe, could be reached in a journey of little more than two days from Christchurch. Since then the "Britain of the South" has become proud of possessing the "playground of Australasia"; the number of visitors has been rapidly increasing; an hotel has been built in a convenient situation near the foot of one of the glaciers; surveys have been undertaken; and the author of this volume, with one or two friends—inexperienced in mountain craft

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